

ROYAL INSTITUTION OF GREAT BRITAIN  
WEEKLY EVENING MEETING

Friday, May 10, 1935

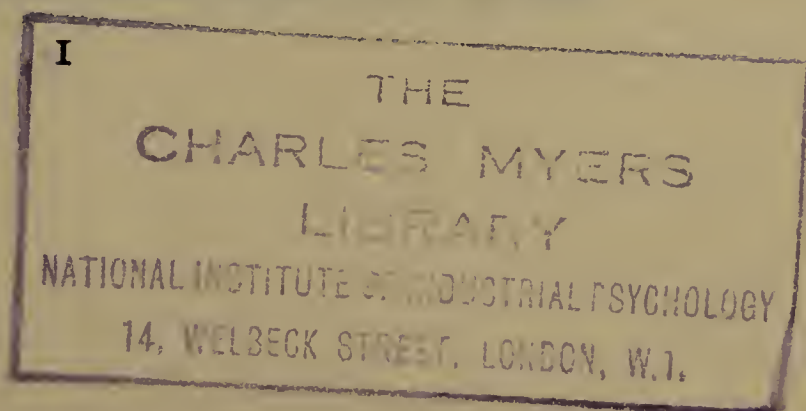
SIR ROBERT ROBERTSON, K.B.E., M.A., F.R.S.  
*Treasurer and Vice-President, in the Chair*

C. S. MYERS, C.B.E., M.D., Sc.D., F.R.S., M.R.I.  
*Principal of the National Institute of Industrial Psychology*

THE SCIENTIFIC APPROACH TO  
VOCATIONAL GUIDANCE

IN several ways the giving of vocational advice resembles the giving of medical advice. Each is an Art, not a Science ; yet each is coming to depend, for its efficient practice, more and more on the use of scientific knowledge and scientific methods. The really successful doctor must employ such scientific knowledge and methods but he must also exercise wise judgment, tact and intuition. He must treat the *individual*, and not merely the *disease* from which he is suffering ; he must take into consideration not merely his patient's local pathological disability, but his whole psychological and physiological constitution, his family and social relations, even his financial circumstances.

So, too, in vocational guidance, the adviser has not only to assess, by methods as scientific and systematic as possible, the mental and physical abilities (and disabilities), the temperament, character and entire personality of the applicant in their relation to possible occupations. He has also to consider the applicant's social, economic and family environment, and the opportunities and prospects which an occupation, otherwise



judged suitable, may at the moment offer. He must finally exercise wise judgment and intuition in reaching his conclusions and in presenting the results of his examination so convincingly that the applicant is logically persuaded—he must never be forced—to adopt the advice which is given to him.

The methods of a science should be very nearly exact, and its results almost accurately predictable; the practice of an art can never be so. It is therefore absurd to expect that, even with the most scientific approach, vocational guidance can result, as it is popularly expected to result, in the discovery of an ideal “niche”—a perfect “fit” between the “peg” of an applicant and the “hole” of one single occupation advised for him. The trained vocational psychologist hardly ever recommends only one occupation; he usually offers several options, in any one of which, he believes, the applicant may reasonably be expected to obtain a good measure of happiness and success.

Vocational guidance, then, cannot be based solely on the use of scientific knowledge and methods. Indeed, whereas scientific tests can present a fair picture of the applicant's mental abilities, no tests have yet been devised which will measure with sufficient reliability his temperamental and character qualities. These, therefore, the psychologist is compelled to assess not only from his own observations of the applicant, but also from detailed reports obtainable from the parents and teachers of the applicant, who each see him in very different environments, and from the applicant's own attempts at self-estimation. So far the chief contribution of the vocational



## SCIENTIFIC APPROACH TO VOCATIONAL GUIDANCE

psychologist to the improved assessment of temperament and character has consisted in his employment of more systematic methods of procedure.

A medical examination is often very helpful to him, but it results in the discovery rather of disabilities than of abilities, it yields *contra-indications* rather than *indications* of employment. For example, a girl who suffers from damp hands is unsuitable for a dress shop; a lad who is prone to giddiness is unsuitable for scaffolding work; occupations subjecting the applicant to a close atmosphere on the one hand, or to rough weather on the other, may be medically *contra-indicated*.

The analysis of occupations has become more reliable and systematic with the help of the psychologist. It is not enough to know about the conditions of entry, course and cost of training, nature of the work, pay, prospects and available vacancies in a given occupation. The mental abilities and the qualities of temperament and character requisite for success in each occupation must also be investigated. Most of the hand-books so far published upon the requirements of different occupations are lamentably defective in affording information under this head. Nor are the statements of successful men of business any more precise or helpful. Occupational analysis is pre-eminently a psychological problem.

I have said enough to discourage exaggeration of the part played at present by psychological tests in the conduct of successful vocational guidance. Yet that part, although still relatively small, has now, with increasing research, experience and knowledge, become essential. The

most important and most reliable test in the vocational psychologist's equipment is that for intelligence. It is important because different occupations—from the highest professions down to the lowest forms of casual labour—demand very different degrees of intelligence, and because it is as dangerous a strain on mental and physical health for a person to engage in work that demands far greater intelligence than he possesses, as it is perpetually boring and irritating for him to engage in work that demands far less intelligence than he possesses.

Intelligence runs through virtually all work—both “intellectual” and “manual.” It consists essentially in discovering relevant relations and in making appropriate use of them. A most useful test is one devised by Professor Cyril Burt, when he was engaged on vocational guidance at the National Institute of Industrial Psychology. It can be given to large numbers of persons simultaneously, and is therefore known as a group test of intelligence. It deals with symbols, viz. abstract ideas, words and numbers, and is therefore termed a group test of verbal intelligence.

How intelligence varies from occupation to occupation is indicated in the accompanying Table. It gives a classification of London school children according to their intelligence levels, and of adult males according to the level of intelligence which they exhibit in their different occupational categories. It shows also what percentage of school children fall within each grade of intelligence and what percentage of male adults follow trades or professions belonging to each vocational category. The table can only be regarded as reaching a rough approximation to accuracy. Yet, on the

# SCIENTIFIC APPROACH TO VOCATIONAL GUIDANCE

## DISTRIBUTION OF INTELLIGENCE AMONG CHILDREN AND ADULTS\*

(1)	(2)	(3)	(4)	(5)
Level of intelligence (in mental ratio).	Educational category or school.	Number of children (in percentages).	Vocational category.	No. of Male adults (in percentages).
1. Over 150	Scholarships (University honours)	0.2	Highest professional and administrative work	0.1
2. 130-150	Scholarships (secondary)	2	Lower professional and technical work	3
3. 115-130	Central and higher elementary	10	Clerical and highly skilled work	12
4. 100-115	Ordinary elementary	38	Skilled work. Minor commercial positions	26
5. 85-100	Ordinary elementary	38	Semi - skilled work. Poorest commercial positions	33
6. 70-85	Dull and backward classes	10	Unskilled labour and coarse manual work	19
7. 50-70	Special schools for the mentally defective	1.5	Casual labour	7
8. Under 50	Occupation centres for the ineducable	0.2	Institutional cases (imbeciles and idiots)	0.2

\* From "A Study in Vocational Guidance," Report No. 33 of the Industrial Fatigue Research Board, H.M. Stationery Office, 1926, p. 13.



whole, it does not negative the ideal of trying to fit a person's occupation to the degree of intelligence with which he is endowed.

Intelligence cannot be isolated in practice from the material on which it acts. The vocational psychologist therefore employs not only a "verbal" intelligence test concerned with symbols; he has also devised a "practical" intelligence test, concerned with the manipulation of concrete objects; and one day there may well be a "social" intelligence test dealing with living individuals. By testing the practical, as well as the verbal intelligence of the applicant, the vocational psychologist is aided in advising the applicant as to the kind of work or study—theoretical or practical—which he is best fitted to undertake. Some of these tests of practical intelligence will be shown to you presently; others may be seen later in the Library. Like all vocational tests, they aim at assessing innate, not acquired, ability. A lad or girl may succeed in gaining a scholarship more by the narrow ability to "cram" than through real intelligence. On the other hand, he or she may be doing badly at school, as a result of past absences through illness, or owing to personal dislike of his teacher or school, but may nevertheless possess high innate intelligence.

But intelligence is not the only ability required for success. Although it is involved in various degrees in all, or in nearly all occupations, the latter demand for success many other abilities, known as "group" abilities and "special" abilities according as they are common to a group of activities or are specific to a single activity. Certain occupations, for example, demand in

## SCIENTIFIC APPROACH TO VOCATIONAL GUIDANCE

different degrees mechanical ability (the ability to understand and to solve problems involving moving mechanisms), manual ability (the ability to make dextrous movements of the hands), literary, linguistic or other abilities. Therefore, special tests have been devised to estimate such abilities, some of which will be demonstrated to you presently. Our present knowledge, derived from prolonged research, indicates that there is a single "group" factor of mechanical ability entering into the apprehension and employment of the mechanical principles involved in the use of machines and implements. Research has likewise shown that in the more complex kinds of manual work, there is another single "group" factor of manual ability, which becomes less important in manual tasks of greater simplicity where "specific" manual factors, peculiar to each such simple task, become relatively more prominent. It appears, therefore, possible to devise certain tests of mechanical and manual ability which will usefully determine the broad kind of occupation suitable. Some of these will be shown you later. It is generally only in vocational *selection*, where one is endeavouring to choose the best person for a particular job, instead of, as in vocational *guidance*, the best job for a particular person, that one can apply a series of tests which are derived from a study of the detailed specific requirements of some single narrow occupation. The procedures of vocational selection and of vocational guidance are therefore by no means identical, although in certain circumstances, as in works or institutions, where only a few occupations are available, no hard and fast line can be drawn between them.

DR. C. S. MYERS

# NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY VOCATIONAL GUIDANCE CASES

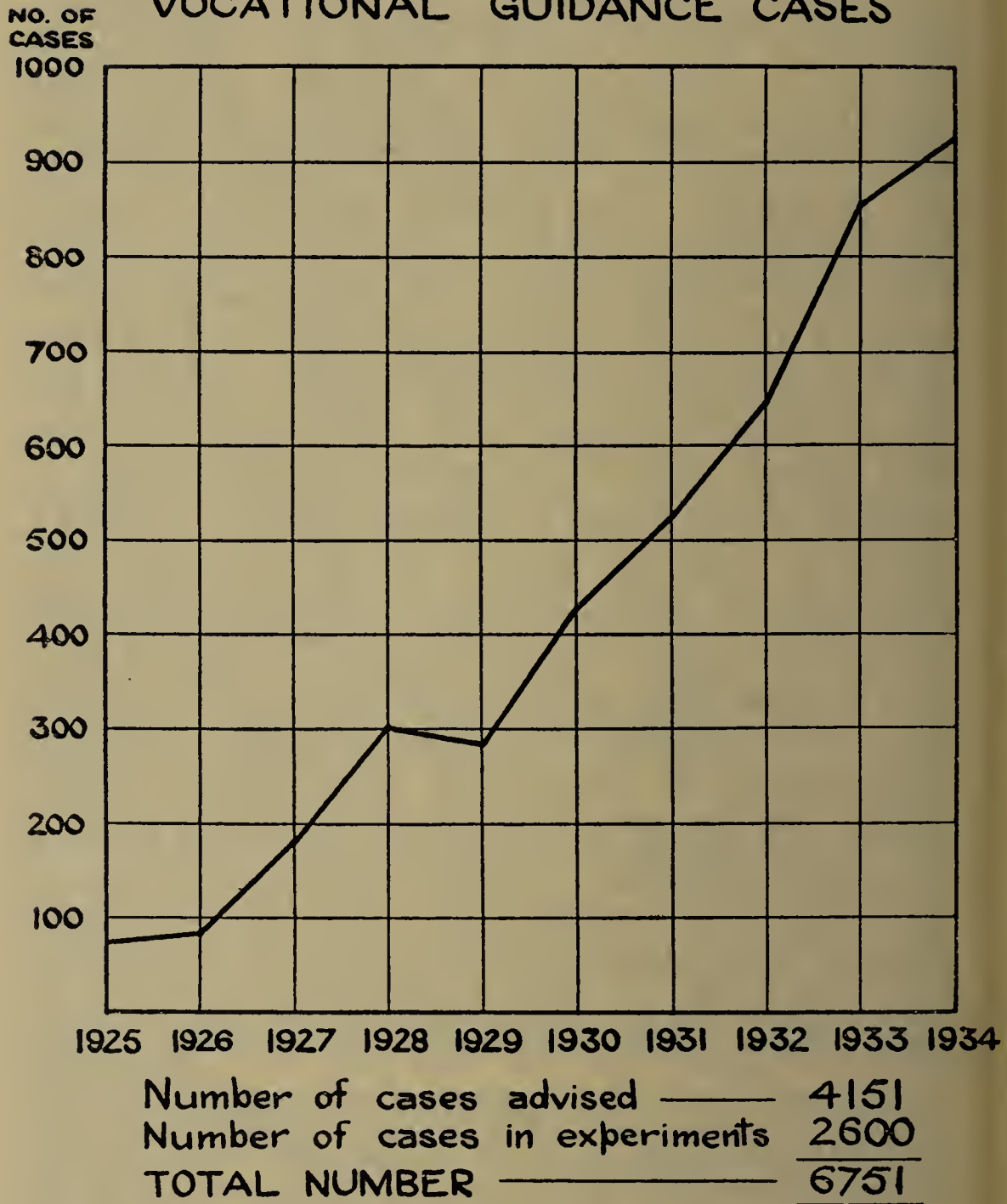


FIG 1.

The amount of research work on vocational guidance, carried out in recent years, especially in Great Britain, has been considerable. This is illustrated in Fig. 1, which shows the work



## SCIENTIFIC APPROACH TO VOCATIONAL GUIDANCE

carried out by the two Bodies in this country, which have contributed most to such research.

As in other arts, for example, those of surgery and teaching, many improvements are due as much to practice as to research. The growth of practice in the use of more scientific and systematic methods of vocational guidance is illustrated in this graph. The success of this work, however, is indicated not only by its growth and by the increasing number of old applicants (at 20 or more) but also by a series of periodic "follow-up" studies of old cases, when an inquiry is made regarding the satisfaction of each past applicant with his career, and, at times, the satisfaction of the employer with his young employee. The latest published data, concerned mainly with secondary and public school pupils, are here shown: a further similar inquiry is now being made, but the results are not yet ready for presentation.

The value of the scientific approach to vocational guidance has been especially well demonstrated by two experiments, on 1,200 and 325 young people respectively, leaving elementary schools, each divided into a "control" group which received the usual vocational guidance, and an equal "experimental" group to which psychological methods were applied.

It is hardly surprising that such a letter as this should have been received from a headmaster—"The number of people nowadays who are at their wits' end to know what to do with their boys is appalling; and, realizing that my knowledge of the boy is imperfect and one-sided, and my knowledge of occupational requirements grossly inadequate, I always feel more or less of

a charlatan when called upon to advise. My only consolation is that my advice is so rarely followed that there is no real cause for my distress."

Too often in the current methods of vocational guidance, the advisor is compelled to rely chiefly on the applicant's own wishes, ambitions and interests. But these, although not to be neglected, are far from being infallible. I can illustrate this by such actual cases as those of an unimpressive, shy lad who wished to become a commercial traveller, but whose interests lay solely in travelling; of a girl who wished to become a hospital nurse because, knowing her weakness in arithmetic, she understood that nursing did not require mathematical ability; of a feeble youth devoid of courage, who aspired to become an aviator, his day-dream phantasies thus compensating, as a defence-mechanism, for his defects of character. Analysis of a group of applicants who had expressed a predilection for some particular career when applying for guidance by the vocational psychologist, shows that about one-half of them were found unsuitable for that career—about one-half of these on the grounds of unsuitable mental ability, the other half on the grounds of unsuitable temperament and character.

In this country, vocational guidance in state schools lies in the hands of the Ministry of Labour. The officers of that Ministry and of various Educational Authorities have given every possible help in the conduct of the experiments to which I have alluded, and in that of others which time prevents me from describing. A recent report of a Joint Committee of the National Councils in England and Wales and in Scotland



## SCIENTIFIC APPROACH TO VOCATIONAL GUIDANCE

for Juvenile Employment recommends the Ministry to encourage further experiments, and to approve of the expenditure of money by Education Authorities in such directions for the purpose of grants.

For although the Ministry of Labour is responsible for Vocational Guidance throughout the United Kingdom, the work is in England undertaken in some places by the Ministry of Labour, in others by the Local Education Authority where it has seen fit to do so. There can be no doubt as to the desirability of national vocational guidance being conducted *jointly*—by the Education Authorities, whose teachers have an intimate knowledge of their pupils, and by the Ministry of Labour officials, who have the closest contact with occupations, their prospects and requirements. In the same recent report of the two National Councils for Juvenile Employment to the Ministry of Labour, it is wisely recommended that generally the vocational advice to young people should be given in Conferences held at the school, not at the Employment Bureau or Exchange. The scientific approach to the practice of vocational guidance affects both teachers and juvenile employment officers—the former in improving their knowledge, methods of observation and examination of the child, the latter in understanding the methods used and the results obtained by the teachers, and in improving the analysis of the requirements of different occupations—the different abilities and qualities of temperament and character needed for success.

As regards the teachers, instruction is already being given to a small but increasing number in the methods described above. Clearly the



teacher's contribution to vocational guidance should not begin just as the pupil is leaving school. In most of the important public schools, part-time careers masters have already been appointed, but so far without having received any instruction in the methods of a more scientific approach to vocational guidance. Nevertheless, as I have indicated, beginnings have already been made, and the future of a more scientific approach to vocational guidance is full of hope, if only further research is encouraged and reasonable claims are made, and if only criticisms are considered when they come from reliable and unprejudiced sources. No subject is of greater practical importance at the present day ; and no subject is more appropriate for consideration at the present moment when, in commemoration of His Majesty's twenty-five years of reign, a large fund is being collected which, at the suggestion of the Prince of Wales, is to be employed for improving the welfare and happiness of the Nation's youth.

You will no doubt welcome an opportunity of seeing how these improved, more scientific methods of vocational guidance, blended with wise judgment and vision, are actually employed. Dr. Angus Macrae, who has had unique practical experience of the subject has kindly consented now to give a demonstration of the application of these methods to a case seeking advice.

[C. S. M.]

The Discourse was followed by a demonstration of the method of vocational guidance applied to an individual case by

DR. ANGUS MACRAE